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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,137	07/10/2001	Seung-Woo Lee	06192.0254.NPUS00	5787

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McGuire Woods LLP
1750 Tysons Boulevard
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McLean, VA 22102

EXAMINER

LIANG, REGINA

ART UNIT	PAPER NUMBER
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2674

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/901,137

Applicant(s)

LEE ET AL.

Examiner

Regina Liang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-22 and 25-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-22 and 25-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 28 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 17 of copending

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Application No. 10/154,919. Although the conflicting claims are not identical, they are not patentably distinct from each other.

Claim 28 of this application	Claim 17 of copending application 10/154,919
A method of driving a liquid crystal display,..., the method comprising the step of: Sequentially transmitting scanning signals to the gate lines;	A method of driving a liquid crystal display,..., the method comprising the step of: Sequentially transmitting scanning signals to the gate lines;
upon receipt of RGB gray scale data for display picture images from the outside, establishing RGB gammas based on the RGB gray scale data and predetermined imaginative gamma curves, and generating data voltage based on the established RGB gammas;	receiving RGB gray scale signals from an external picture signal source to control a gamma curve while being adapted to the gray scale signals, and outputting one or more variable gray scale voltages based on the controlled gamma curve; and
feeding the data voltages generated at the (b) step to the data lines.	transmitting data voltages to the data lines based on the variable gray scale voltages.

As can be seen above, claim 28 of this application is similar to claim 17 of copending application 10/154,919. Claim 28 of this application differs from claim 17 of copending application 10/154,919 in that claim 28 recites establishing RGB gammas based on the RGB gray scale data and predetermined imaginative gamma curves while claim 17 recites controlling a gamma curve while being adapted to the gray scale signals, however, they are not patentably distinct from each other because both “establishing RGB gammas based on the RGB gray scale data and

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predetermined imaginative gamma curves” and “controlling a gamma curve while being adapted to the gray scale signals” are for generating corrected RGB picture data as disclosed in both applications.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

4. Claim 28 is rejected under 35 U.S.C. 102(e) as being anticipated by Moon (US. Pub. No. 2002/0180680).

As to claim 28, Fig. 2 of Moon discloses a LCD device having gate lines and data lines. The display device of Moon receives RGB gray scale signals from the outside, and displays picture images on the basis of the received RGB gray scale signal. The display device of Moon is adapted to the RGB gray scale signals to control a gamma curve, and outputs variable gray scale voltages on the basis of the controlled gamma curve (e.g., see page 3, sections [0053]-[0055]). Moon also discloses the gray scale voltage generation unit transforms the analog type gray scale signals into a gamma curve with a predetermined gamma constant, and outputs variable gray scale voltages on the basis of the gamma curve, e.g. see pages 1-2, sections [0022]-[0024] of Moon, this corresponds to establishing RGB gammas based on the RGB gray scale data and predetermined imaginative gamma curves, and generating data voltages based on the established RGB gammas as claimed.

Claim Rejections - 35 USC § 103

5. Claims 1-4, 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai et al (US. PAT. NO. 5,359,342 hereinafter Nakai) in view of Ryan (US. PAT. NO. 6,075,514).

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As to claim 1, Nakai discloses a LCD display comprising a LCD panel, a control unit having a color correction unit (look-up tables) generating corrected RGB picture data based on gray values (0-255) of a predetermined imaginative gamma curve (e.g., see Fig. 4) established in accordance with the characteristic of the LCD panel (col. 4, lines 49-68 for example). Nakai does not disclose the control unit storing the generated corrected picture data at initial driving, after the initial driving, extracting corrected picture data corresponding to the raw RGB picture data from the memory and transmitting the extracted picture to the data driver. However, it is old and well known in the art that in order for a color correction unit to correct color values including applying look-up table correction to input color value data to obtain corresponding corrected output data must first perform a process that includes an initial step, and obtain initial values for correction. For example, Fig. 5 of Ryan teaches a system for correcting pixel color values comprising at initial step, obtaining corrected picture data using look-up table, storing the corrected picture data into the memory, after the initial step, extracting corrected picture data from the memory corresponding to the new input color values and outputting the extracted corrected picture data (col. 5, line 48 to col. 6, line 64 for example). Thus it would have been obvious, to one of ordinary skill in the art at the time the invention was made to modify Nakai to have the control unit for correcting pixel color values perform the various steps as discussed above as taught by Ryan so as to provide a faster color correction technique in which re-using output corrected color values, and thereby avoids re-determination of corrected values in many cases.

As to claim 2, Nakai teaches the number of bits in the corrected picture data is altered through making bit extension with respect the new picture data (e.g., col. 9, lines 60-61).

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As to claims 3, 4, Nakai teaches the imaginative gamma curves is the G gamma curve adapted to the G picture data (e.g., see Figs. 8 and 9 of Nakai).

As to claim 33, note the discussion of claim 1 above. Ryan teaches the first corrected RGB data has a bit number (32 bits) equal to the bit number (32 bits) of the input RGB data, and the second corrected RGB data has a bit number (32 bits) equal to the bit number (32 bits) of the first corrected RGB data (col. 5, lines 48-66).

As to claims 34, 35, Ryan teaches a RAM to store the first corrected RGB data (col. 6, lines 36-38).

6. Claims 5-7, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai and Ryan as applied to claim 1 above, and further in view of admitted prior art (page 1, line 13 to page 4, line 17, and Figs. 1-6).

As to claims 5-7, 9, note the discussion of claim 1 above. Nakai as modified by Nakai does not disclose the LCD panel makes the display in a VA mode or a PVA mode. However, the admitted prior art teaches it is well known in the art that the LCD panel makes the display in a VA mode or a PVA mode. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD panel of Nakai as modified by Ryan to make the display in a VA mode or a PVA mode as taught by the admitted prior art for controlling the gray levels of the display.

As to claim 10, Nakai teaches the corrected gamma curves having gray scale extension.

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7. Claims 11-15, 19-21, 25, 28-32, 36-39, 41, 44, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai and Ryan as applied to claim 1 above, and further in view of Takahara et al (US. PAT. NO. 5,196,738 hereinafter Takahara).

As to claims 11, 25, 28, 36, 44, note the discussion of claim 1 above. Nakai as modified by Ryan does not disclose the LCD display comprising a plurality of gate lines and a plurality of data lines, switching circuits connected to the gate and the data lines, a scan driver and a data driver. However, Fig. 3 of Takahara teaches a LCD display device comprising a plurality of gate lines and a plurality of data lines, switching circuits (TFT) connected to the gate and the data lines, a scan driver and a data driver. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD display of Nakai as modified by Ryan to have TFT-LCD as taught by Takahara so as to provide a LCD display having a light weight and an excellent image quality.

As to claims 12, 19, 29-32, Nakai teaches normalizing the RGB gamma curves and controlling the gray scale levels of the picture signal as claimed (e.g., Figs. 7 and 8 and col. 5, lines 44-57 of Nakai).

As to claims 13, 14, Nakai as modified by Ryan teaches a color correction unit as claimed (see the rejection of claim 1 above). Fig. 1 of Nakai also teaches the control unit comprising a timing control unit (12, 13) outputting the transformed picture data to the data driver and generating timing signal for controlling the operation of the scan driver and the data driver.

As to claim 15, Ryan teaches the color correction unit further makes a treatment of dithering (col. 5, lines 34-35).

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As to claim 20, 21, Nakai teaches the number of bits in the corrected picture data can be the same as the bit number of the inputted picture data or can be altered through making bit extension with respect the new picture data (col. 9, lines 60-61).

As to claim 37, Ryan teaches the correction unit having a first and a second memories (RAM 30 and cache memory 22 or register of CUP 20 or a ROM 31) for storing the first corrected RGB data, and a memory controller (CPU) to control the first and second memories.

As to claims 38, 45, Ryan teaches the first corrected RGB data has a bit number (32 bits) equal to the bit number (32 bits) of the input RGB data, and the second corrected RGB data has a bit number (32 bits) equal to the bit number (32 bits) of the first corrected RGB data (col. 5, lines 48-66).

As to claims 39, 41, Ryan teaches the first memory comprising a RAM 30 and the second memory comprising a ROM 31.

8. Claims 16, 17, 22, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai, Ryan and Takahara as applied to claim 11 above, and further in view of Saxena et al (US. PAT. NO. 5,777,590 hereinafter Saxena).

As to claims 16, 22, 40, Nakai as modified by Ryan and Takahara does not disclose the multi-gray scale transformation is made through frame rate control FRC. However, Saxena teaches a device using frame rate control modulation for intensity shading for each pixel for providing gray scale shading for a LCD display device. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakai as modified by Ryan and Takahara to use a frame rate control FRC in the multi-gray scale transformation as

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taught by Saxena so as to support various level intensity shadings using a frame rate control scheme and ensure that the pixel drivers in the display have balanced loading.

As to claim 17, Nakai teaches the color correction unit comprises a memory control unit (CPU, LUT), Nakai as modified by Ryan teaches the memory control unit storing values of an imaginative gamma curve corresponding to the characteristic of the LCD panel as claimed.

9. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai, Ryan, Takahara, Saxena as applied to claim 17 above, and further in view of Huang et al (PUB. NO. 2001/0045946 hereinafter Huang).

Nakai as modified by Ryan, Takahara and Saxena does not disclose the memory control unit comprising a non-volatile memory for storing picture data. However, it is well known in the art that a memory control unit comprising a non-volatile memory (col. 5, section [0062] of Huang). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the memory control unit of Nakai as modified by Ryan, Takahara and Saxena have a non-volatile memory since Huang teaches this type of memory complements the low power characteristic of the Ch-LCD.

10. Claims 26, 27, 42, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai, Ryan and Takahara as applied to claims 11, 25, 36 above, and further in view of admitted prior art (page 1, line 13 to page 4, line 17, and Figs. 1-6).

Nakai as modified by Ryan and Takahara does not disclose the LCD panel makes the display in a VA mode or a PVA mode. However, the admitted prior art teaches it is well known

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in the art that the LCD panel makes the display in a VA mode or a PVA mode. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD panel of Nakai as modified by Ryan and Takahara to make the display in a VA mode or a PVA mode as taught by the admitted prior art for controlling the gray levels of the display.

Response to Arguments

11. Applicant's arguments filed 8/13/04 have been fully considered but they are not persuasive.

Applicants' remarks regarding the double patenting rejection on pages 16-18 are not persuasive; see rejection above.

Applicants' argument regarding claim 28 on page 18 are not persuasive. Moon teaches the gray scale voltage generation unit transforms the analog type gray scale signals into a gamma curve with a predetermined gamma constant, and outputs variable gray scale voltages on the basis of the gamma curve (see pages 1-2, sections [0022]-[0024] of Moon), this corresponds to establishing RGB gammas based on the RGB gray scale data and predetermined imaginative gamma curves, and generating data voltages based on the established RGB gammas as claimed.

Applicants' remarks regarding the combination of Nakai and Ryan on pages 19- 20 are not persuasive. Applicants cannot show non-obviousness by attacking references individually where, as here the rejections are based on combination of references. Nakai teaches the display device is a liquid crystal display comprising a display panel and a color correction unit. In response to applicant's argument that Ryan is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably

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pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Ryan discloses a system for correcting pixel color values having a color correction unit to correct color values including applying look-up table correction to input color value data to obtain corresponding corrected output data which is reasonably pertinent in correcting pixel color values, and Ryan further teaches the device may be used in any system for determining output values corresponding to a series of input values (col. 8, lines 9-13).

Applicants' remarks on pages 20-26 are not persuasive since all the limitations of the claims are obvious over Nakai in view of the secondary references, see the rejection above. In addition, applicants' remarks merely repeated the claim limitations, almost verbatim, and then alleges and concludes the prior art references do not disclose these limitations, this type of remarks are not persuasive. Rule 37 CFR 1.111(b) requires that applicant MUST "distinctly and specifically point out errors" in the examiner's action and conclusions of attorney cannot take the place of evidence.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Regina Liang whose telephone number is (703) 305-4719. The examiner can normally be reached on Monday-Friday from 9AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (703) 305-4709. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.


REGINA LIANG
PRIMARY EXAMINER
ART UNIT 2674

RL